University of Cincinnati

Date: 11/10/2015

I, Yue Cao , hereby submit this original work as part of the requirements for the degree of Master of Science in Biostatistics (Environmental Health).

It is entitled:

A Trend Analysis of Hospital Admissions of Pediatric Asthma from 1997-2012

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A Trend Analysis of Hospital Admissions of Pediatric Asthma from 1997-2012

A thesis submitted to the

Graduate School of the University of Cincinnati

in partial fulfillment of the

requirement for the degree of

MASTER OF SCIENCE

In the Department of Environmental Health

Of the College of Medicine

2015

by

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Abstract

The main focus of research is analysis of Kid's Inpatient Database (KID). The KIDS is a sample of pediatric discharges from all community non-rehabilitation hospitals in the participating states of the HCUP project. Pediatric discharges are defined as all discharges where the patient was of age 20 or less at admission. Multiple years data sets are available every 3 years from 1997 to 2012 including Inpatient Core File, Hospital File, Disease Severity Measures File, and Diagnosis and Procedure File. The CDC (Center for Disease Control and Prevention) also publishes prevalence of pediatric asthma annually based on a survey it conducts.

We examined the number of discharges because of pediatric asthma over the years 1997 to 2012 triennially. The trend is decreasing and the average number of pediatric asthma discharges annually is 184,000. The prevalence trend is also decreasing as from the CDC survey and the rate is about 7%. We also examined the prevalence of pediatric asthma state by state over the years 2000 to 2009 triennially. Total numbers of state by state pediatric asthma discharges is also estimated. Distributions of gender and race are determined from the KID data. The gender distribution is about 60% versus 40% males versus females. The top 5 asthmatic conditions are identified. The top condition has the ICD-9 code 493.92 and has the description 'ASTHMA UNSPECIFIED WITH (ACUTE) EXACERBATION'. For the years 2003-12, length of stay, total hospital charges and in-hospital mortality are estimated.

Acknowledgement

First and foremost, I would like to show my deepest gratitude to my advisor, Dr. Marepalli Bhaskara Rao, a respectable and responsible, who has provided me with valuable guidance in every stage of the writing of this thesis. Without his enlightening instruction, impressive kindness and patience, I could not have completed my thesis. His keen and vigorous academic observation enlightens me not only in this thesis but also in my future study.

I shall extend my thanks to Dr. Changchun Xie for all his kindness and help. I would also like to thank all my teachers who have helped me to develop the fundamental and essential academic competence. My sincere appreciation also goes to the professors and classmates from the department of Biostatistics of University of Cincinnati, who always willing to help and give you the best suggestion.

Last but not least, I`d like to thank all the people who give me help during this period of time.

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Chap 1.Introduction

Asthma is one of the most common long-term diseases that affects lungs. Moreover, pediatric asthma is a significant public health problem in the US with continued report of rising prevalence. According to the most recent estimates, asthma affects 9% of US children in 2012. Asthma accounted for approximately ten million missed days of school, seven million outpatient visits, six hundred thousand emergency department visits and one hundred and fifty thousand hospitalization in 2010 [1]. Unfortunately, pediatric asthma is still a serious health problem that is hard to cure. Even when the patient is asymptomatic, the disease is merely dormant and can flare up at any time. Asthma causes wheezing, breathlessness, chest tightness, and coughing at night or early in the morning. If you have asthma, you have it all the time, but you will have asthma attacks only when something bothers your lungs [2]. In this study we focus the trends analysis based on KID database. The following theme will be running in my study.

1. Estimate the total number of admissions (participating states) due to pediatric asthma over the period 1997 to 2012 triennially. Determine the proportion of pediatric asthma admissions to total hospital admissions.
2. Estimate gender and race distribution (participating states) of pediatric asthma over the period 1997 to 2012 triennially.

3. Estimate the mean length of stay (participating states) with standard error over 1997 to 2012. Obtain the frequency distribution of the length of stay.
4. Estimate the total charges (participating states) with standard error over 1997 to 2012. Estimate in-hospital mortality rate.
5. Asthma is a broad name. There are 14 different major types of asthma noted in the form of ICD-9 codes. Determine the top 5 conditions with respect to gender and race.
6. Estimate the total number of admissions nationwide state by state due to pediatric asthma over the period 2000 to 2009 triennially as well as the gender distribution. Since for years 1997 and 2012 is not available state-wide, we have excluded these years.
7. Estimate the prevalence nationwide among total numbers of pediatric asthma as well as gender distribution.

1.1 Database

The data in the HCUP databases primarily include data from non-federal community hospitals. Federal, long-term care, psychiatric, and tuberculosis hospitals are generally excluded [3].

The American Hospital Association (AHA) categorizes hospitals into five main categories, including:

- Community (included)
- Federal (excluded)
- Long-term care (excluded)
- Psychiatric (excluded)
- Tuberculosis (excluded)

The KID data is designed to be a national representation of hospital care. Because the KID sampling frame is not designed with "state" as a stratification variable, state-level analyses cannot be conducted. The file structure is similar to the Nation Inpatient Sample (NIS), but with additional variables that are relevant for research on children (e.g., age in months and age in days). The KID is derived from the State Inpatient Database (SID) to permit researchers to study a broad range of conditions and procedures related to child health issues. Researchers and policymakers can use the KID to identify, track, and analyze national trends in health care utilization, access, charges and costs, quality, and outcomes. It is the only all-payer inpatient care database for children in the United States, and it is designed to permit research on rare pediatric conditions.

1.2 Sampling Method

For sampling, pediatric discharges are stratified into three categories:

- Uncomplicated in-hospital births
- Complicated in-hospital births
- Other pediatric hospital stays

Systematic random sampling is used to select 10% of uncomplicated in-hospital births and 80% of complicated in-hospital births and other pediatric cases from each frame hospital in order to achieve about 20% overall sampling rate. This over-sampling of complicated births and pediatric non-births ensures that we get a good representation of rare pediatric hospitalizations. We do not need to sample many of the uncomplicated births because there is little difference in the characteristics of one uncomplicated birth compared to another uncomplicated birth. So we only need a small representation of uncomplicated births.

- The KID is a stratified sample of discharges from the State Inpatient Databases, or SID.
- The target universe for the KID is US community, non-rehabilitation hospitals with pediatric discharges, again, based on the American Hospital Association (AHA) Annual Survey of Hospitals.
- The KID is a sample of individual discharges of pediatric patients. The definition of pediatric subject is 20 years and under.
- The KID contains a sample of over 7 million hospital discharge records taken from more than 4,000 HCUP participating hospitals, which is equal to approximately 20% of the total discharges from U.S. community hospitals for each data year.

1.3 Structure of Data

The KID contains clinical and resource-use information that is included in a typical discharge abstract, with safeguards to protect the privacy of individual patients, physicians, and hospitals (as required by data sources). It contains more than 100 clinical and nonclinical data elements for each hospital stay, including:

- Primary and secondary diagnoses and procedures(e.g.,DX,DXCC,CCS)
- Discharge status
- Patient demographics (e.g., sex, age, race, median income for ZIP Code)
- Hospital characteristics (e.g., ownership, size, teaching status, Census region and division)
- Expected payment source
- Total charges
- Length of stay
- Severity and comorbidity measures

1.4 DRG Code

A Diagnosis-Related Group (DRG) is a statistical system of classifying any inpatient stay into groups for the purpose of payment. The DRG classification system divides possible diagnoses into more than 20 major body systems and subdivides them into almost 500 groups for the purpose of Medicare reimbursement [4]. Factors used to determine the DRG payment amount include the diagnosis involved as well as the hospital resources necessary to treat the condition. Also used by a few states for all

payers and by many private health plans (usually non-HMO) for contracting purpose. Hospitals are paid a fixed rate for inpatient services corresponding to the DRG group assigned to a given patient. Beginning in 2007, Center for Medicare & Medicaid Services (CMS) overhauled the DRG system with the development of "severity-adjusted DRGs." Specifically, beginning in October 2007, CMS began to replace DRGs with "Medicare-severity DRGs" or "MS-DRGs" through a three-year phase-in period that blended payment under the old DRG system and the MS-DRG system.

Hospitals use DRG codes to determine the patient type for each hospital admissions. Unlike ICD-9/ICD-10 code, DRG codification is not the same for all years. There is a reference available outlining which DRG codification should be used for the year of interest. From years 1997-2012 triennially, we use version DRG-10 for 1997, DRG-18 for 2000 and 2003, DRG-24 for 2006 and 2009, DRG-30 for 2012.For the years 2008–12, the same DRG code DRG 202 and 203 (represents Bronchitis and asthma with major complications) was used for asthma. Before 2008, DRG 98 represents Bronchitis and asthma of patients with age ranging 0 to 18 (available for 1997-2006 of pediatric asthma). The numbers DRG 202 and 203 were first used in October 2007. They are unchanged for the years 2009 to 2012.

1.5 ICD-9 Code（CCS）

The International Classification of Diseases (ICD) is designed to promote international comparability in the collection, processing, classification, and presentation of mortality statistics. This includes providing a format for reporting causes of death on the death certificate. The reported conditions are then translated into medical codes through the use of the classification structure and the selection and modification rules contained in the applicable revision of the ICD, published by the World Health Organization (WHO). These coding rules improve the usefulness of mortality statistics by giving preference to certain categories, by consolidating conditions, and by systematically selecting a single cause of death from a reported sequence of conditions.

The ICD code has been revised periodically to incorporate changes in the medical field. To date, there have been 10 revisions of the ICD. ICD-9 code has more than 17,000 numbers to generalize diagnosis conditions while ICD-10 has more than 170,000 numbers [5]. Now we can also covert ICD-9 with ICD-10 automatically as we desired. In my study, for year 1997 and 2012 we use DX1 (primary diagnosis of ICD-9) to identify the subset of variables with pediatric asthma for the analysis. There are 14 different types of asthma as detailed by ICD-9 codes. And we also use DX1 to identify the top 5 conditions of pediatric asthma by checking the frequency yearly.

The Clinical Classifications Software (CCS) for ICD-9-CM is a diagnosis and procedure categorization scheme that can be employed in many types of projects analyzing data on diagnoses and procedures. CCS is based on the International

Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) a uniform and standardized coding system. The ICD-9-CM's multitude of codes - over 14,000 diagnosis codes and 3,900 procedure codes - are collapsed into a smaller number of clinically meaningful categories that are sometimes more useful for presenting descriptive statistics than are individual ICD-9-CM codes [6]. For example, CCS can be used to identify populations for disease or procedure-specific studies or to develop statistical reports providing information (such as charges and length of stay) about relatively specific conditions. CCS was formerly called the Clinical Classifications for Health Policy Research (CCHPR). From years 2000-2009 triennially we use CCS1=128 (primary diagnosis of CCS) to identify the subset of variables with pediatric asthma for the analysis.

1.6 CDC Group

The Center for Disease Control and Prevention (CDC) is a leading national public health institute of the United States. Its main goal is to protect public health and safety through the control and prevention of disease, injury, and disability. The CDC focuses national attention on developing and applying disease control and prevention. The CDC is organized into "Centers, Institutes, and Offices" (CIOS) which allow it to be responsive and effective in its interface with public health concerns. The data and survey systems are including CDC Scientific Data, Surveillance, Health Statistics, and

Laboratory Information [7]. CDC provides us a series of good summary statistics on pediatric asthma.

Chap 2.Method

2.1 Domain Analysis

For a domain D, let I_D be the corresponding indicator (binary) variable:

$$I_D(a,b,c) = \begin{cases} 1, & if\ observation\ (a,b,c)\ belongs\ to\ D \\ 0, & otherwise \end{cases}$$

The domain D is identified by the Primary and secondary diagnoses and procedures of pediatric asthma (e.g.,DX,DXCC,CCS).

Let

$$v_{abc} = w_{abc}\, I_D(a,b,c) = \begin{cases} w_{abc}, & if\ observation\ (a,b,c)\ belongs\ to\ D \\ 0, & otherwise \end{cases}$$

And in my analysis the requested statistics for variable Y in domain D are computed by using the new weights v. The total discharges, los, totchg etg for participating states can be generated by the following equation:

$$\hat{Y}_D = \sum_{a=1}^{H} \sum_{b=1}^{n_a} \sum_{c=1}^{m_{ab}} v_{abc} \times y_{abc}$$

Where:

a = 1, 2,…, A is the stratum (KID_stratum in my study).

b = 1, 2, …, n_a is the cluster (HospitalID in my study) within stratum h.

c = 1, 2,…, m_{ab} is the unit (Sample Discharges) within cluster i of stratum h.

$n = \sum_{a=1}^{A} \sum_{i=1}^{n_a} m_{ab}$ is the total number of observations in the sample.

y_{abc} denotes the observed value of variable Y for sample discharge c within sample hospital b within stratum a.

v_{abc} denotes a set of discharge weights or any other constants over the set of sample discharges, hospitals, and strata. In our study, the important weights of each record was given by the value of the variable DISCWT for which we can find it yearly from 1997 to 2012.

For example for year 2009 under our focus, suppose we want to estimate total numbers of female asthma discharges among the participating states. The domain of interest is female=1 and CCS=128 (primary diagnose for asthma of CCS code). Using the data isolated by these two specifications, we want to estimate total number of female pediatric discharges. This is done by domain analysis [8]. SAS has PROC SURVEYMEANS procedure which performs domain analysis. We have implemented

this procedure to obtain estimates and standard errors for a numbers of different domains.

2.2 Regression Modeling

Based on the KID database from 2000-2009 triennially, although the participating states increased a lot, there are still some non-participating states. In order to get estimates nation-wide, we use the regression analysis method and do the regression for each year separately. In our study, we build a general regression model of the form

$$Y \approx f(\mathbf{X}, \boldsymbol{\beta})$$

For example, suppose we want to estimate total number of asthmatic discharges for each of the non-participating states. We estimate total number of asthmatic discharges for each of the participating state and X=pediatric population size of the corresponding state. We run a weighted simple linear regression model of Y on X with standard errors as weights. Use the model to predict total asthmatic discharges for each non-participating state using its pediatric population size. This type of analysis is pursued for many other ventures of estimation for non-participating states.

Chap 3.Results

3.1 Mortality

The in-hospital mortality due to pediatric asthma averaged from 1997 to 2012 is less than 0.03% (Table 6). But we have noticed that in year 2000, the mortality is about 0.06% and much higher than other years. Moreover, there is an increasing trend of mortality starting from 2006 and still increasing after 2012.

3.2 Total Discharge –Race

There are 6 categories of people (race) in the KID database. From 1997-2012, the average percentage of White, Black and Hispanic discharges is more than 90% (Figure 1). From 1997 to 2012, there is a decreasing trend among White discharges. In contrast, Blacks have an increasing trend of asthma discharges. The proportion of asthma discharges among Blacks is higher than that of Whites for the first time 2012 (Table 2).

3.3 Total Number of Discharges – Gender Distribution

The gender distribution is about 60% versus 40% males versus females (Figure 2 & Table 4).

3.4 Length Of Stay

The mean of length of stay among pediatric discharges averaged from 1997 to 2012 is about 2.3 days (Table 5). We also obtained the frequency distribution of length of stay for each of the years from 1997 to 2012. Two days stay is the most frequent in 1997-2009 but one day in 2012.

3.5 Total Charges for Pediatric Asthma Discharges

The mean of total hospital charges averaged from 1997-2012 is about 8000, and there is an increasing trend from 1997 to 2012 and ranged from 5000-15000 (Table 6). However the in-hospital mortality increased.

3.6 The Top 5 Pediatric Asthma Conditions

There are 14 types of pediatric asthma conditions generated by ICD-9 Codes (Table 7). Data are not comprehensive for the years 1997 and 2000. From 2003 to 2012, the top 5 conditions are 493.91, 493.90, 493.01, 493.92 and 493.02 (Figure 3). The code 493.92 is the top condition and has the description 'ASTHMA UNSPECIFIED WITH (ACUTE) EXACERBATION' (Figure 4). Over 50% of pediatric asthma discharges are due to this condition.

3.7 Gender Distribution of Top 5 Pediatric Asthma Conditions

The top 5 pediatric asthma conditions among males and females are the same and they also agreed with the top 5 conditions among all discharges (Figure 5). Especially,

for conditions 493.01 and 493.02 the difference among males and females is little. In contrast, the other 3 conditions in males are much higher than in females (Figure 6)

3.8 Top 5 Pediatric Asthma Conditions of Race Distribution Triennially

The top 5 pediatric conditions among Whites and Blacks also agreed with the result among all discharges. Especially, in Whites and Blacks the top 2 conditions 493.91 and 493.92 are much higher than the other 3 conditions (Figure 7).

3.9 Pediatric Asthma Discharges and Prevalence Entire Nation

Since in KID database it did not provide the hospital state variable in 1997 and 2012, we focused on the pediatric discharges and prevalence for the entire nation over the years 2000 to 2009. The total number is decreasing from 220,000 to 150,000 and the average number of pediatric asthma discharges annually is 184,000. On the other hand the average prevalence we estimated is about 7.4% also with a decreasing trend (Table 8). The average number of pediatric asthma discharges among males annually is 110,000 with a decreasing trend from 140,000 to 90,000 with similar trend in prevalence (Table 9). The average number of pediatric asthma discharges among females annually is 69,000 with a decreasing trend from 90,000 to 56,000 with similar trend in prevalence (Table 10). Moreover, the total discharges state by state is given in (Figure 8). The gender distribution of pediatric discharges state by state is given in (Figure 9 and 10). The prevalence rate state by state is given in (Figure 11).The gender distribution of

prevalence state by state is given in (Figure 12 and 13).From the entire US map, we can easily see and check which state has higher or lower discharges rate or prevalence rate.

Chap 4.Conclusion and discussion

We focus on the discharges due to pediatric asthma from the years 1997-2012 triennially and estimate the total discharges, length of stay, total charges and in-hospital mortality for the participating states. Especially for the years 2000-2009, we also estimate the states which not participating in our database, and then estimate the prevalence and total discharges with gender distribution.

In the KID database, there are a lot of variables we have not focus may also give us the significant result for pediatric asthma analysis. Our analysis only focus some of these variables, so future study contain more variables with multiple factors and directions is needed.

The database we focused on from 1997-2012 triennially is changed a lot during this 15 years. The numbers of participating states, hospitals and total admissions changed a lot from 1997-2012. This makes us difficult to identify when we put the data together. On the other side, some of the important variables we have to consider are missing or changing year by year. For example, in year 1997 and 2012 we don't have the hospital information state by state in order to do an overall estimation nationwide to examine the trend. And also in 1997 and 2012, the Primary diagnoses and procedures ICD-9 (DXCCS) are unavailable therefore we have to use other diagnoses variables different from 2000-2009. Moreover, in 1997 and 2000 there are only less than 10 conditions

among all 14 conditions may cause us difficult to estimate the top 5 conditions overall from 1997 to 2012.

In our study, we only focus the top 5 conditions at one time. We did not considered the patient had multiple admissions in single or multiple years, even have multiple diseases at the same time .Under that circumstance, multiple testing adjustment problems should be considered in our further study. For example, we can use the Dunnett's test to identify the comparison of multiple diseases with respect to a single patient.

Table 1: Summary of participating states in the KID database over the years 1997-2012

Year	Participated States	Number of States	Number of Hospitals
1997	AZ CA CO CT FL GA HI IL IA KS MD MA MO NJ NY OR PA SC TN UT WA WI	22	2521
2000	AZ CA CO CT FL GA HI IA KS KY MD MA ME MO NC NJ NY OR PA SC TN TX UT VA WA WI WV (Added KY, ME, NC, TX, VA, WV. IL is not included)	27	2784
2003	AZ CA CO CT FL GA HI IA IL IN KS KY MD MA MI MN MO NC NE NH NJ NV NY OH OR RI SC SD TN TX UT VA VT WA WI WV (Added IL, IN, MI, MN, NE, NH, NV, OH, RI, SD, VT. ME and PA are not included	36	3438
2006	AR AZ CA CO CT FL GA HI IA IL IN KS KY MA MD MI MN MO NC NE NH NJ NV NY OH OKOR RI SC SD TN TX UT VA VT WA WI WV (Added AR and OK. ME and PA are not included)	38	3739
2009	AR AZ CA CO CT FL GA HI IA IL IN KS KY LA MA ME MD MI MN MO MT NC NE NH NM NJ NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY (Added LA, ME, MT, NM, PA and WY)	44	4121
2012	AK AR AZ CA CO CT FL GA HI IA IL IN KS KY LA MA MD MI MN MO MT NC ND NE NJ NM NV NY OH OK OR PA RI SC SD TN TX UT VA VT WA WI WV WY (Added AK, ND. ME and NH are not included)	44	4179

Table 2: Distribution of race of pediatric asthma over the years 1997-2012 (participating states) 1-1.

Year	Among Total (Percent)	Standard Error	95%CI (percent)
1997(White)	1.2224	0.0089	(1.2050-1.2398)
Black	1.0821	0.0080	(1.0664-1.0979)
Hispanic	0.4578	0.0044	(0.4491-0.4665)
Asian or pacific island	0.0630	0.0016	(0.0599-0.0661)
Native American	0.0107	0.0007	(0.0092-0.0121)
Other	0.1296	0.0023	(0.1251-0.1340)
2000(White)	0.9303	0.0065	(0.9176-0.9431)
Black	0.7522	0.0053	(0.7419-0.7626)
Hispanic	0.4150	0.0036	(0.4080-0.4220)
Asian or pacific island	0.0434	0.0011	(0.0412-0.0456)
Native American	0.0110	0.0007	(0.0097-0.0123)
Other	0.1040	0.0020	(0.1001-0.1078)
2003(White)	0.9258	0.0056	(0.9149-0.9368)
Black	0.7809	0.0052	(0.7708-0.7910)
Hispanic	0.5158	0.0041	(0.5077-0.5239)
Asian or pacific island	0.0456	0.0012	(0.0432-0.0479)
Native American	0.0111	0.0006	(0.0099-0.0123)
Other	0.1375	0.0021	(0.1334-0.1417)
2006(White)	0.7331	0.0048	(0.7237-0.7425)
Black	0.6366	0.0045	(0.6279-0.6454)
Hispanic	0.4435	0.0037	(0.4362-0.4507)
Asian or pacific island	0.0408	0.0011	(0.0386-0.0430)
Native American	0.0134	0.0006	(0.0121-0.0146)
Other	0.1009	0.0018	(0.0974-0.1044)

1-2.			
2009(White)	0.7220	0.0042	(0.7138-0.7302)
Black	0.6641	0.0041	(0.6561-0.6720)
Hispanic	0.4349	0.0032	(0.4286-0.4412)
Asian or pacific island	0.0423	0.0010	(0.0403-0.0442)
Native American	0.0165	0.0006	(0.0153-0.0177)
Other	0.1171	0.0017	(0.1138-0.1204)
2012(White)	0.6506	0.0039	(0.6429-0.6583)
Black	0.6993	0.0041	(0.6913-0.7072)
Hispanic	0.4299	0.0032	(0.4237-0.4361)
Asian or pacific island	0.0514	0.0011	(0.0493-0.0535)
Native American	0.0172	0.0006	(0.0159-0.0184)
Other	0.1097	0.0016	(0.1065-0.1128)

Table 3: Total discharges of pediatric asthma over the years 1997-2012 (participating states)

Year	Pediatric Asthma			
	Discharges (Wfreq)	Total (Wfreq)	(Percent)	95%CI (Percent)
1997	200699	6456626	3.0147	(2.9912-3.0382)
2000	158820	7291039	2.1783	(2.1615-2.1951)
2003	173392	7409162	2.3402	(2.3254-2.3551)
2006	143854	7558812	1.9031	(1.8901-1.9161)
2009	143641	7370203	1.9489	(1.9364-1.9615)
2012	128033	6675222	1.9180	(1.9053-1.9308)

Table 4: Gender distribution of pediatric asthma discharges over the years 1997-2012 (participating states)

Year	Among Total (Percent)	Standard Error	95%CI (percent)
1997(male)	1.8495	0.0093	(1.8313-1.8677)
Female	1.1657	0.0074	(1.1513-1.1801)
2000(male)	1.3368	0.0066	(1.3238-1.3498)
Female	0.8419	0.0053	(0.8315-0.8525)
2003(male)	1.4215	0.0059	(1.4099-1.4331)
Female	0.8982	0.0047	(0.8891-0.9074)
2006(male)	1.1616	0.0052	(1.1515-1.1718)
Female	0.7213	0.0041	(0.7193-0.7353)
2009(male)	1.2009	0.0050	(1.1911-1.2108)
Female	0.7360	0.0039	(0.7284-0.7437)
2012(male)	1.1855	0.0051	(1.1756-1.1955)
Female	0.7332	0.0040	(0.7254-0.7410)

Table 5: Length of stay of pediatric asthma discharges over the years 1997-2012 (participating states)

Year	LOS (mean)	Standard Error (mean)	Most Weighted Frequency (days)
1997	2.481580	0.02745	2
2000	2.367784	0.02424	2
2003	2.328225	0.02338	2
2006	2.218354	0.02091	2
2009	2.189829	0.02334	2
2012	2.114870	0.02746	1

Table 6: Hospital charges (TOTCHG) and Hospital Mortality of pediatric asthma discharges over the years 1997-2012 (participating states)

Year	TOTCHG (mean)	Standard Error (mean)	Hospital Mortality (percent)
1997	4892.64	126.10	0.0251
2000	5816.64	159.38	0.0559
2003	7650.60	215.61	0.0136
2006	9166.83	253.80	0.0274
2009	11720	368.83	0.0271
2012	14694	487.95	0.0316

Table 7: List of asthma conditions generated by the ICD-9 code

ICD-9 CODE	ICD-9 CODE DESCRIPTION
493.00	EXTRINSIC ASTHMA UNSPECIFIED
493.01	EXTRINSIC ASTHMA WITH STATUS ASTHMATICUS
493.02	EXTRINSIC ASTHMA WITH (ACUTE) EXACERBATION
493.10	INTRINSIC ASTHMA UNSPECIFIED
493.11	INTRINSIC ASTHMA WITH STATUS ASTHMATICUS
493.12	INTRINSIC ASTHMA WITH (ACUTE) EXACERBATION
493.20	CHRONIC OBSTRUCTIVE ASTHMA UNSPECIFIED
493.21	CHRONIC OBSTRUCTIVE ASTHMA WITH STATUS ASTHMATICUS
493.22	CHRONIC OBSTRUCTIVE ASTHMA WITH (ACUTE) EXACERBATION
493.82	COUGH VARIANT ASTHMA
493.90	ASTHMA UNSPECIFIED
493.91	ASTHMA UNSPECIFIED TYPE WITH STATUS ASTHMATICUS
493.92	ASTHMA UNSPECIFIED WITH (ACUTE) EXACERBATION
V17.5	FAMILY HISTORY OF ASTHMA

Table 8: Total number of discharges and prevalence of pediatric asthma over the years 2000-2009 (entire nation)

Year	Total Discharges (estimate)	Prevalence (average)	Standard Error (average)
2000	220521	7.76051	0.097182
2003	205872	7.60783	0.127086
2006	160652	7.31660	0.093645
2009	149131	7.14976	0.099657

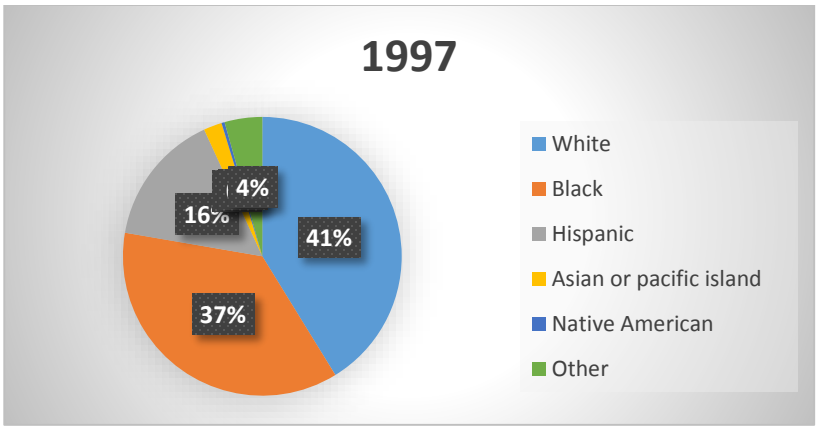
Table 9: Total number of discharges and prevalence of pediatric asthma among males over the years 2000-2009 (entire nation)

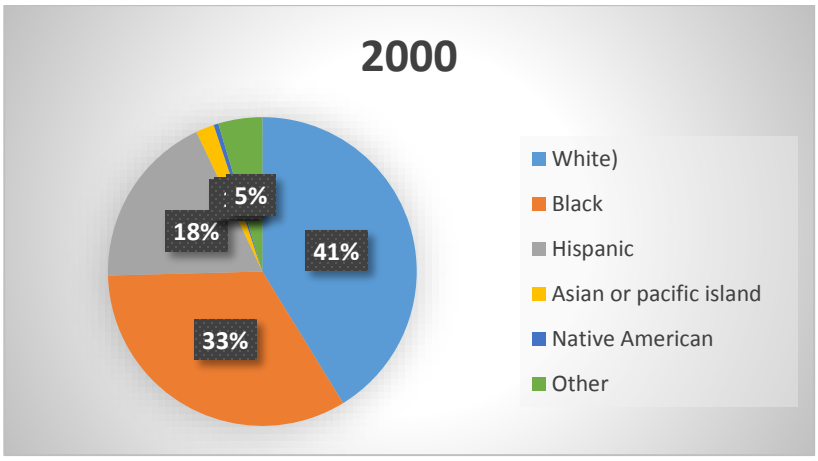
Year	Total Discharges (estimate)	Prevalence (average)	Standard Error (average)
2000	139933	7.38981	0.084890
2003	120492	7.06031	0.085218
2006	97322	6.82025	0.076025
2009	91310	6.66533	0.104227

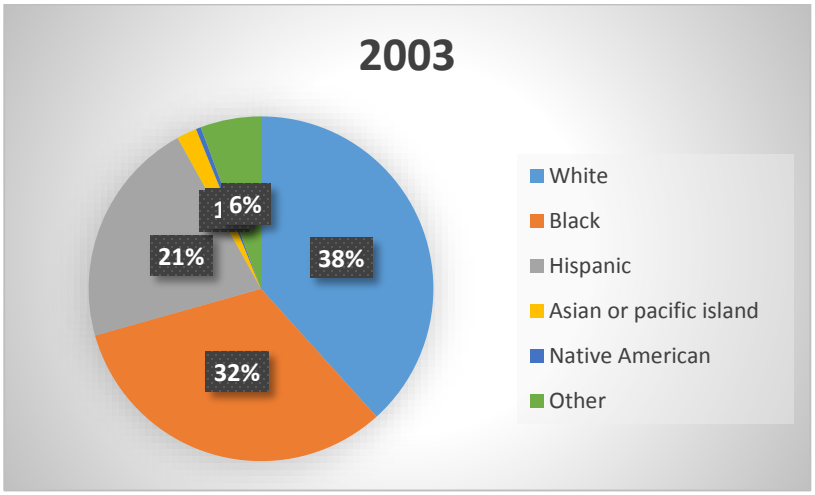
Table 10: Total number of discharges and prevalence of pediatric asthma among females over the years 2000-2009 (entire nation)

Year	Total Discharges (estimate)	Prevalence (average)	Standard Error (average)
2000	89036	6.98349	0.091106
2003	76908	6.61963	0.096712
2006	62170	6.41119	0.093347
2009	56271	6.17991	0.121808

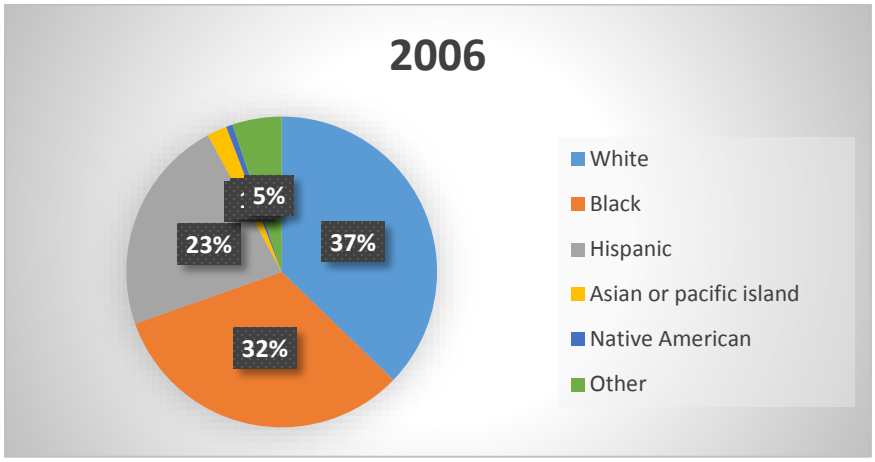
Figure 1: Distribution of race of pediatric asthma discharges over the years 1997-2012 (participating states)

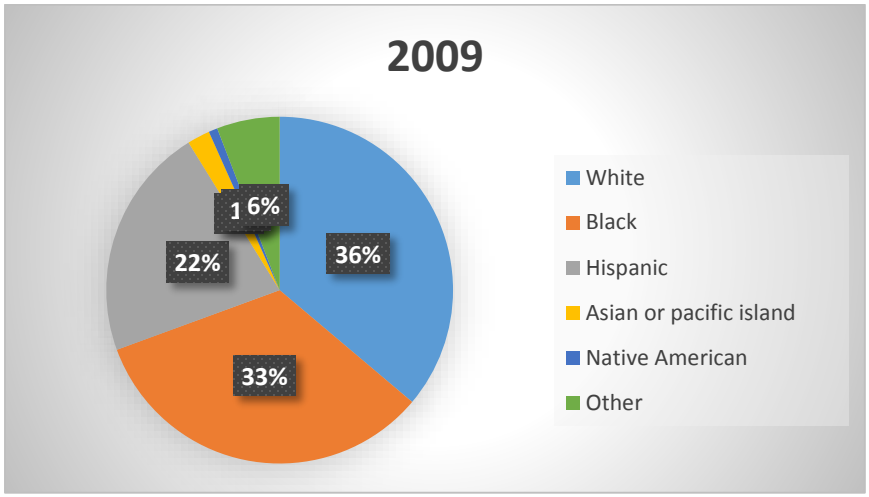






1-2


2006
37%
32%
23%
5%
White
Black
Hispanic
Asian or pacific island
Native American
Other


2009
36%
33%
22%
6%
White
Black
Hispanic
Asian or pacific island
Native American
Other

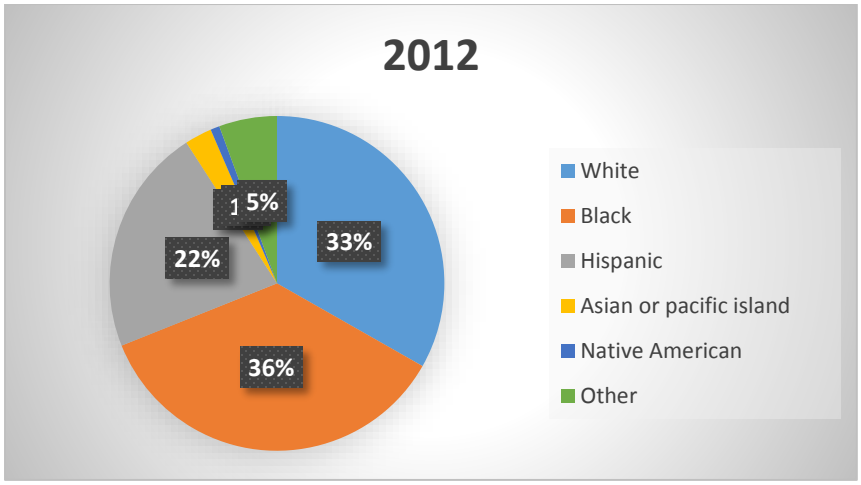
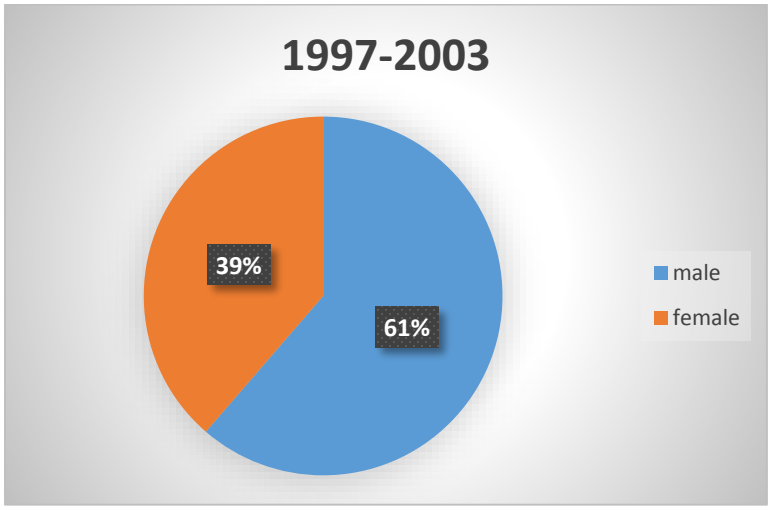

2012
33%
36%
22%
5%
White
Black
Hispanic
Asian or pacific island
Native American
Other

Figure 2: Gender distribution of pediatric asthma discharges over the years 1997-2012 (participating states)



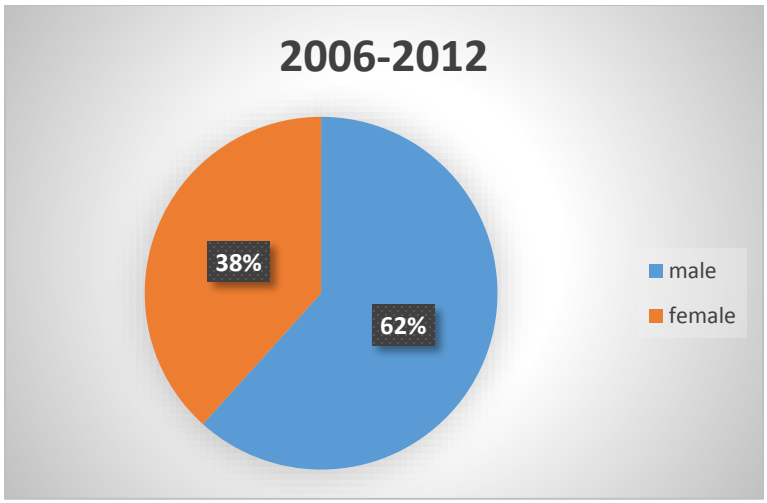


Figure 3: Top five pediatric asthma conditions over the years 1997-2012

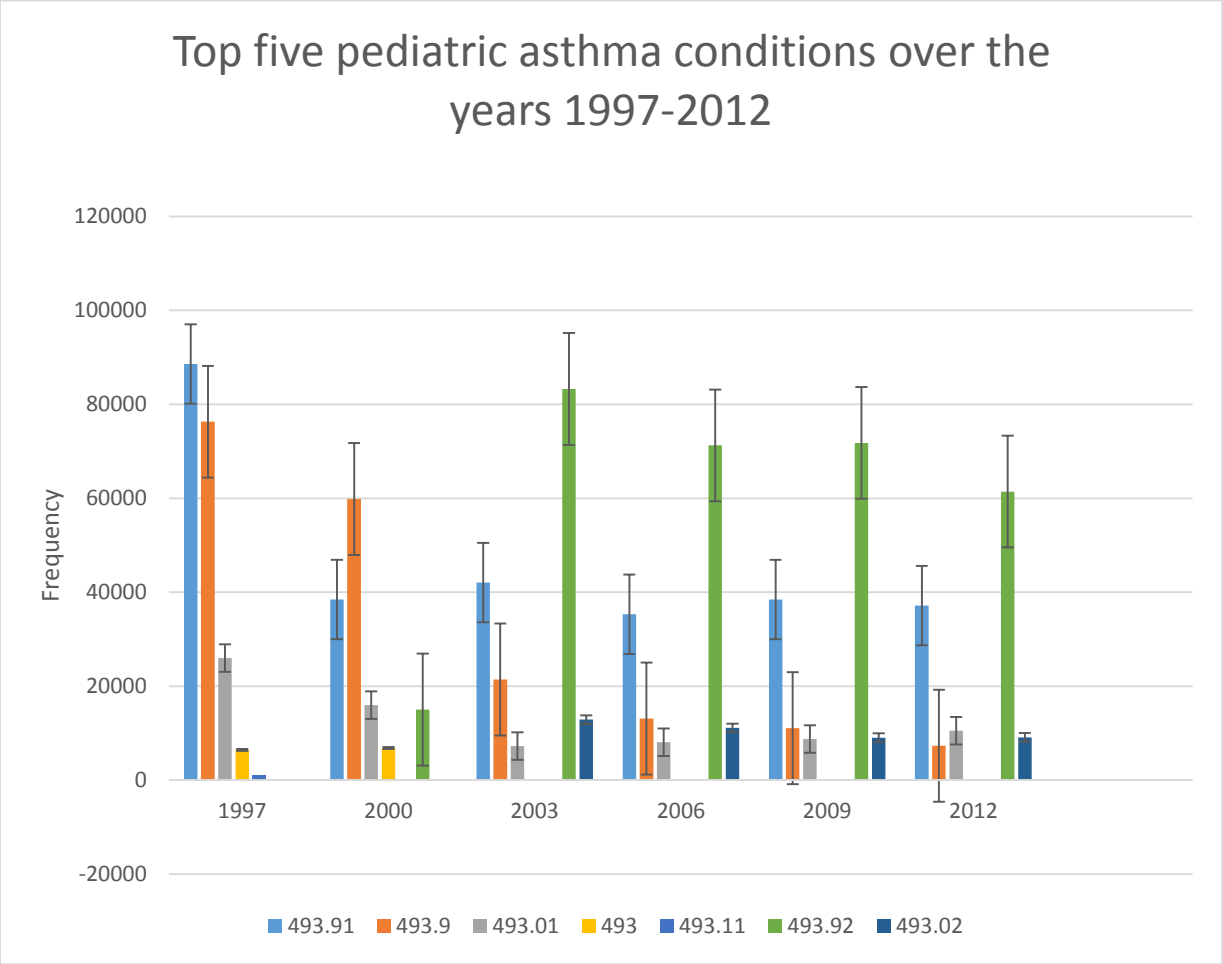


Figure 4: Trend of Top 5 pediatric asthma conditions over the years 1997-2012

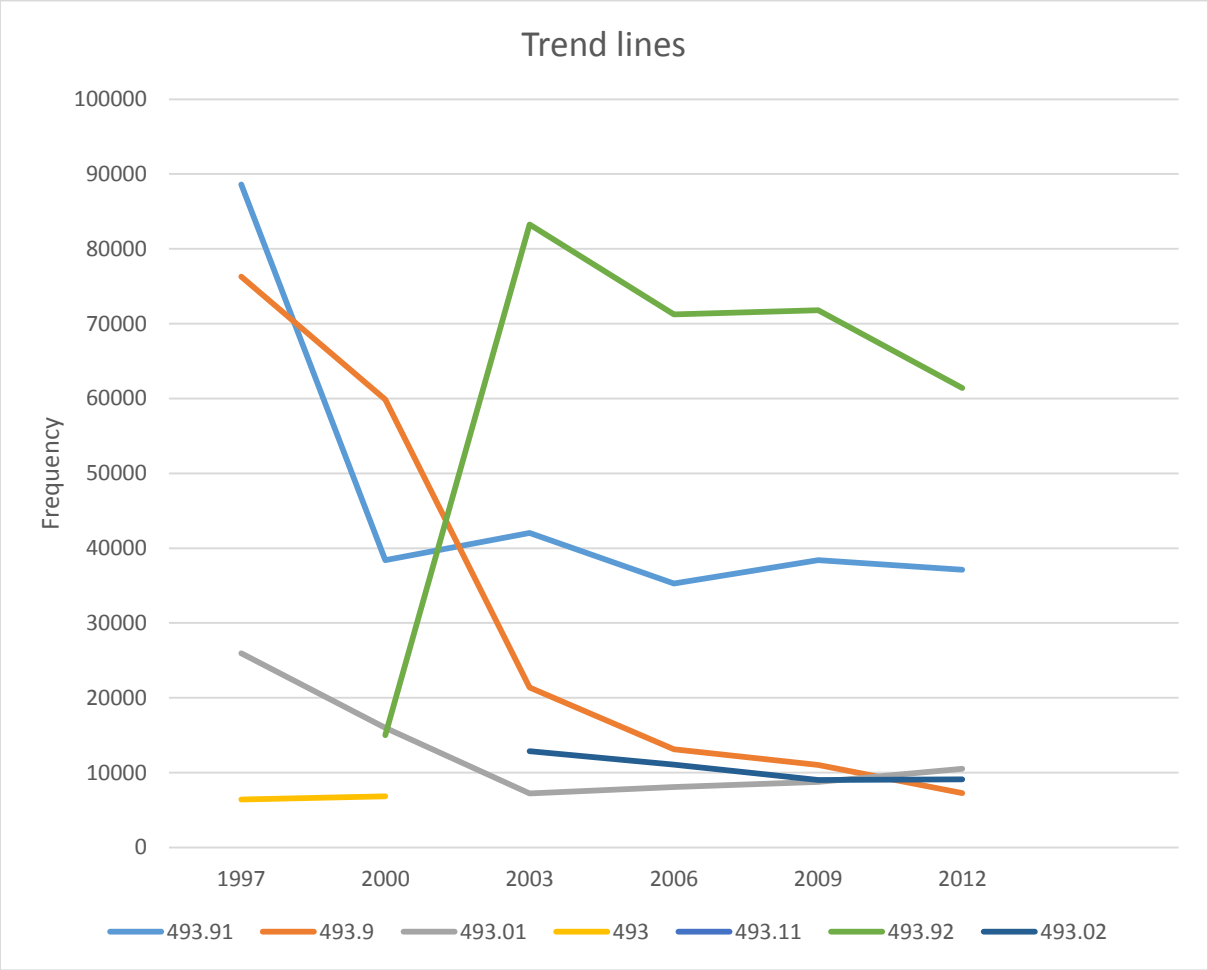


Figure 5: Gender distribution of Top 5 pediatric asthma conditions

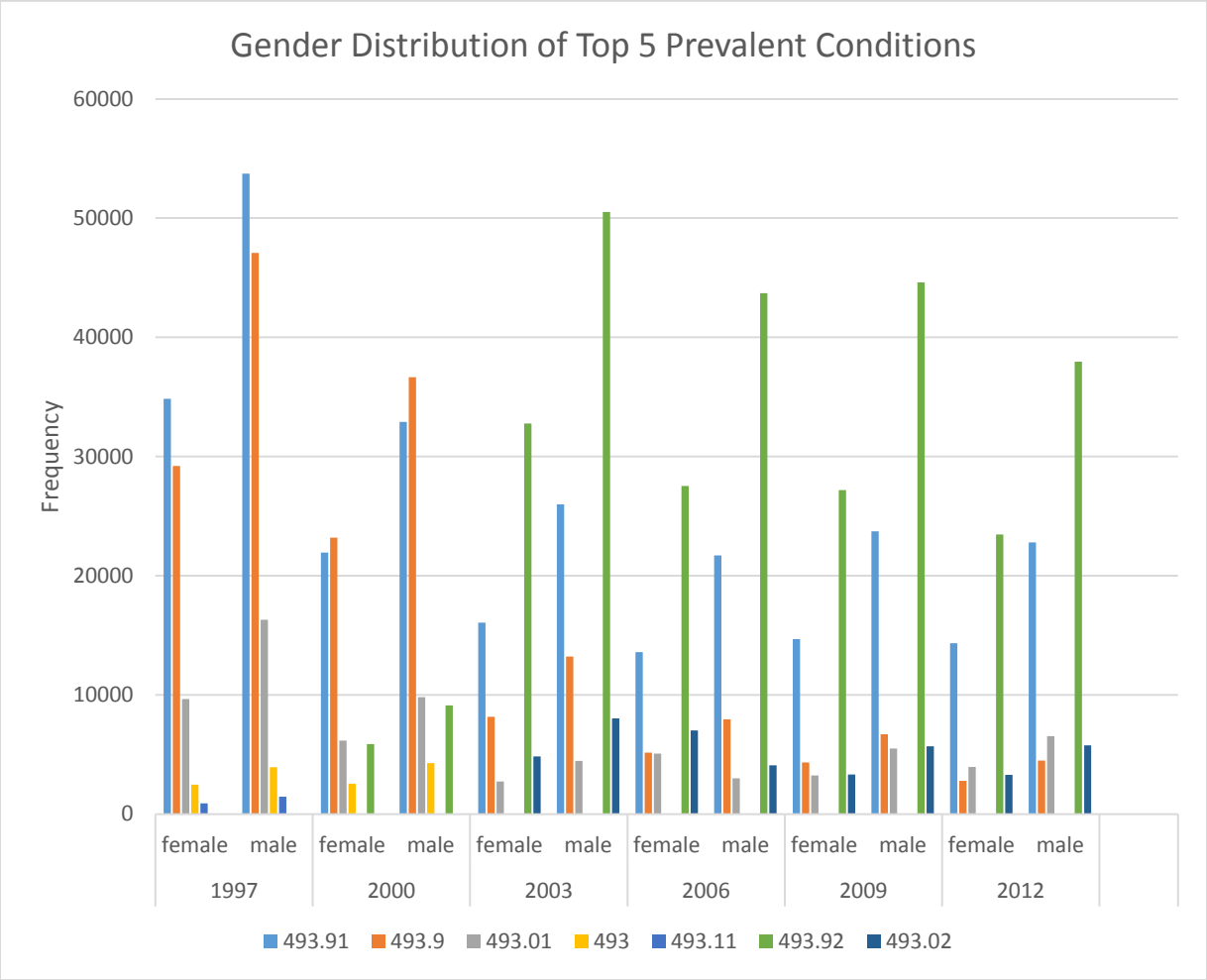


Figure 6: Trend of gender distribution of Top 5 pediatric asthma conditions

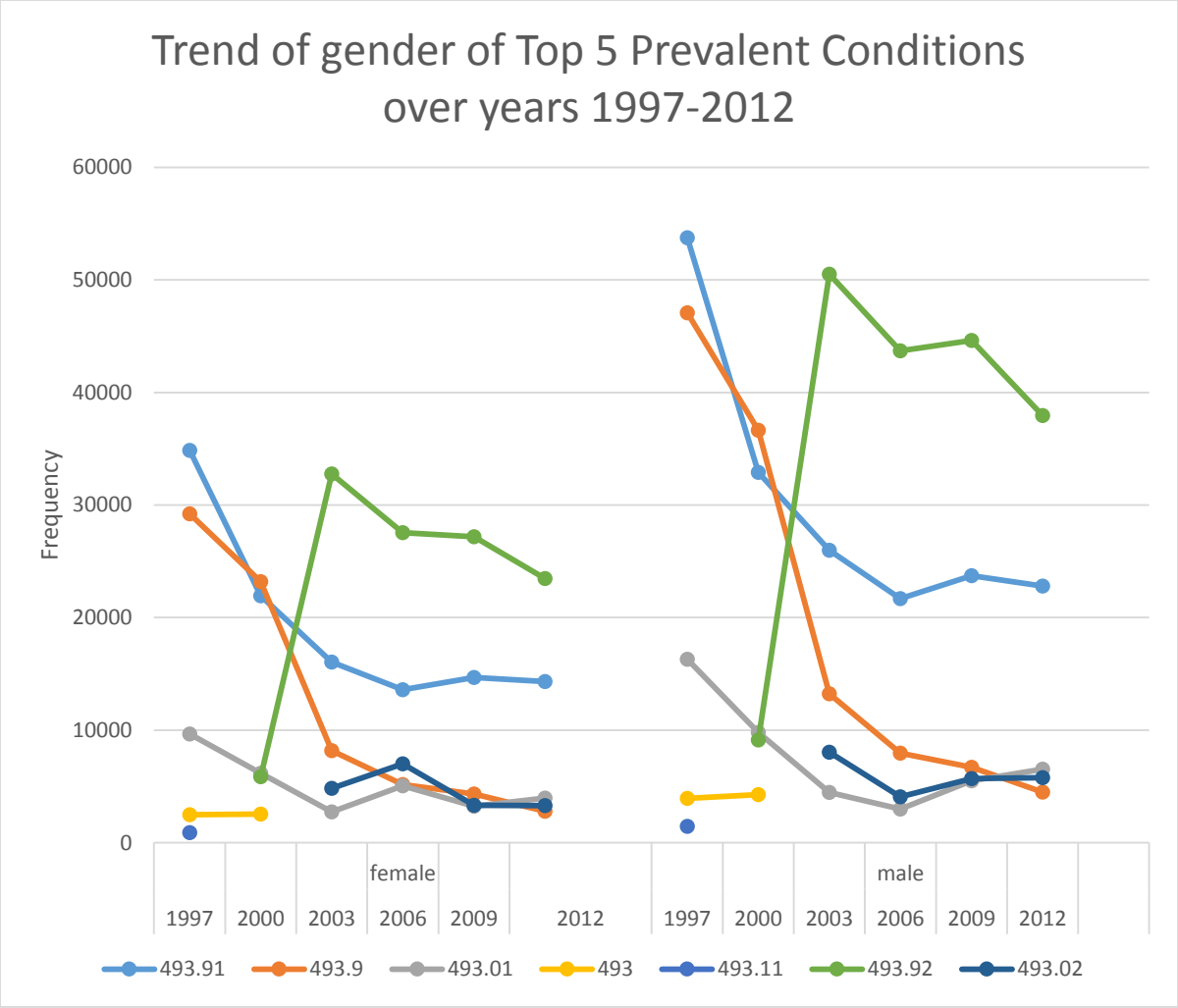


Figure 7: Distribution of race of Top 5 pediatric asthma conditions

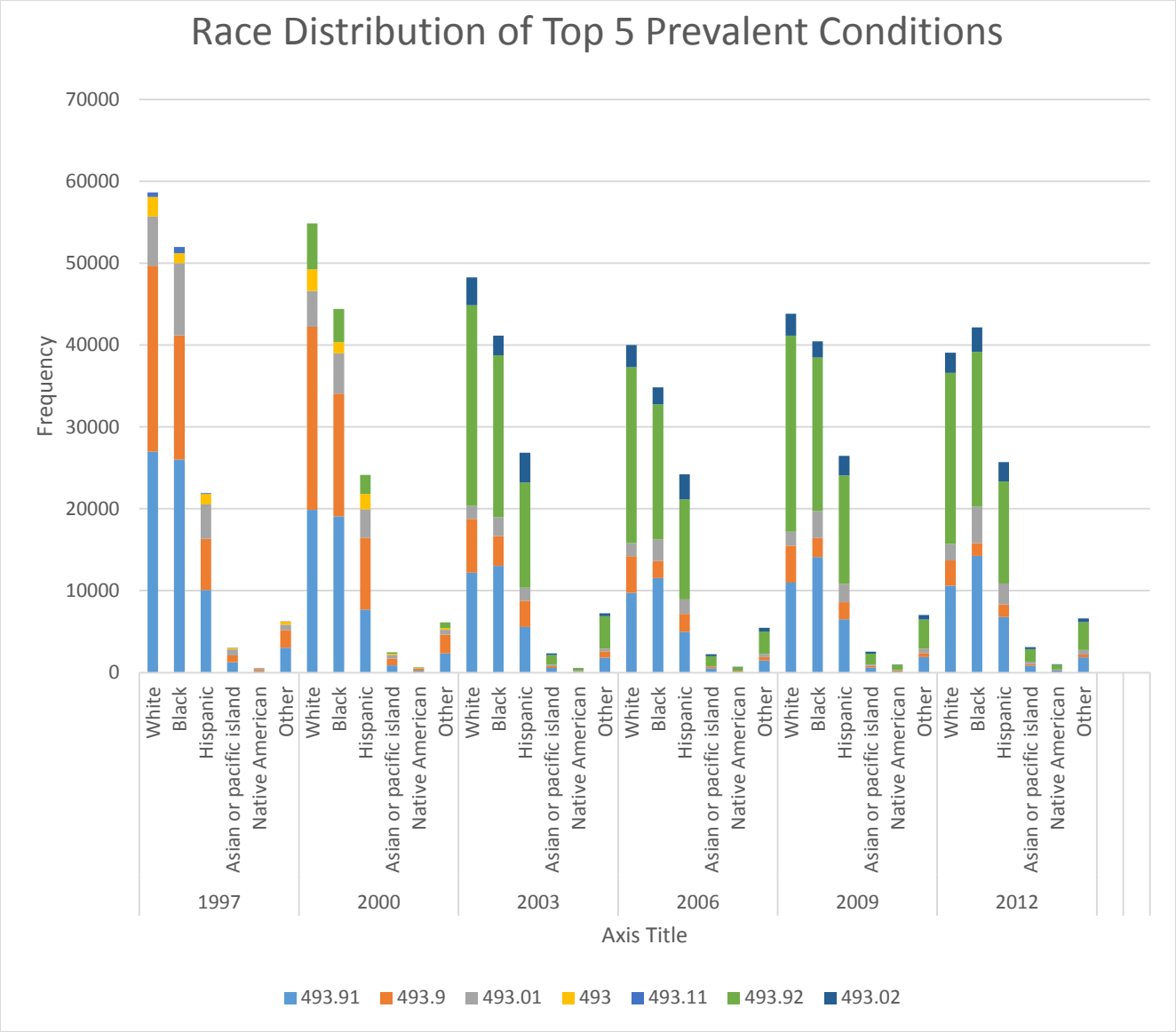


Figure 8: Total numbers of pediatric asthma discharges over years 2000-2009 (entire nation)

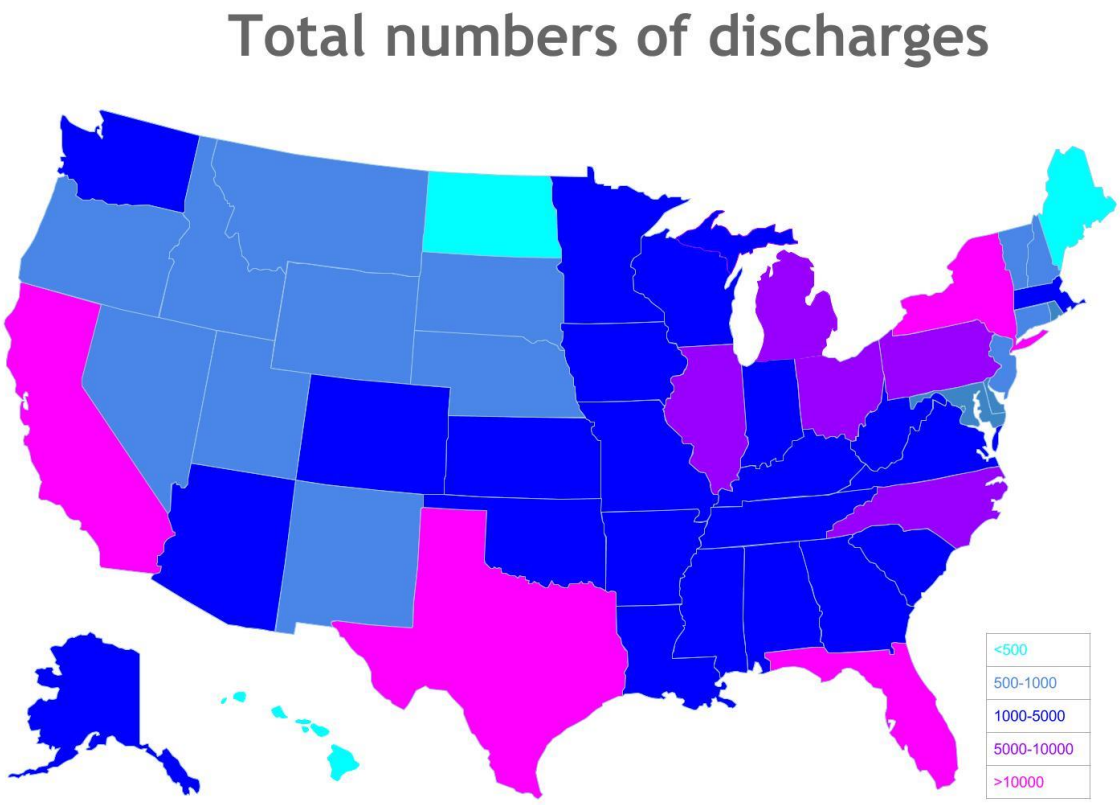


Figure 9: Total numbers of pediatric asthma discharges among males over years 2000-2009 (entire nation)

Total numbers of discharges among males

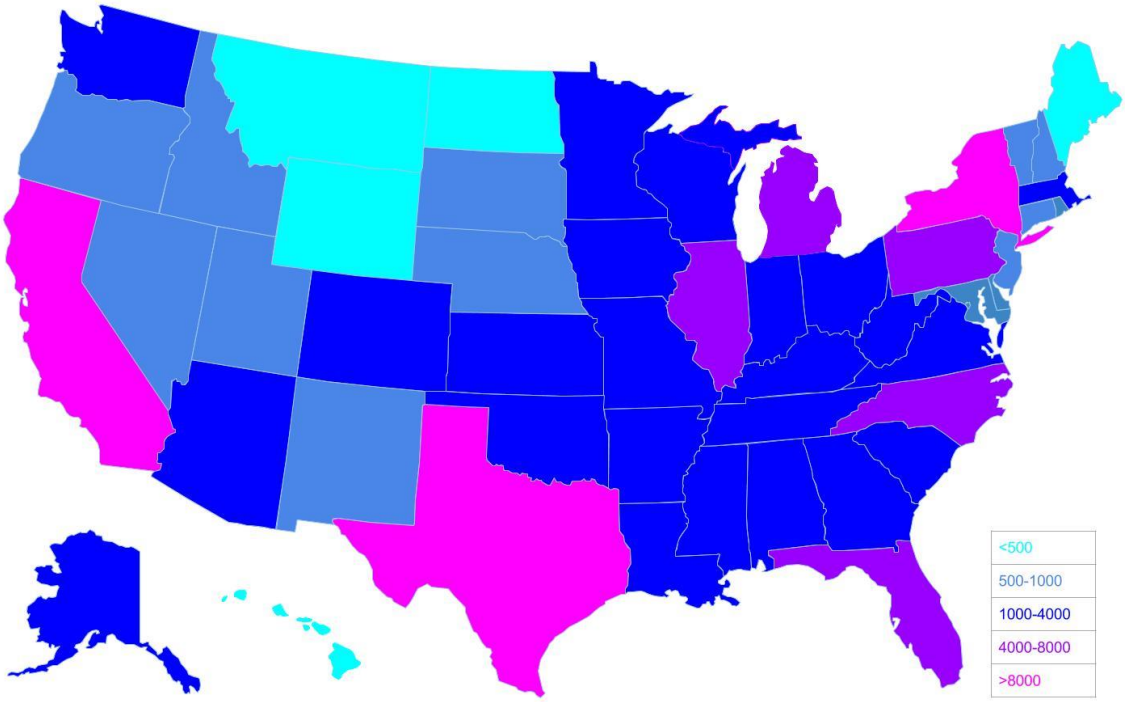


Figure 10: Total numbers of pediatric asthma discharges among females over years 2000-2009 (entire nation)

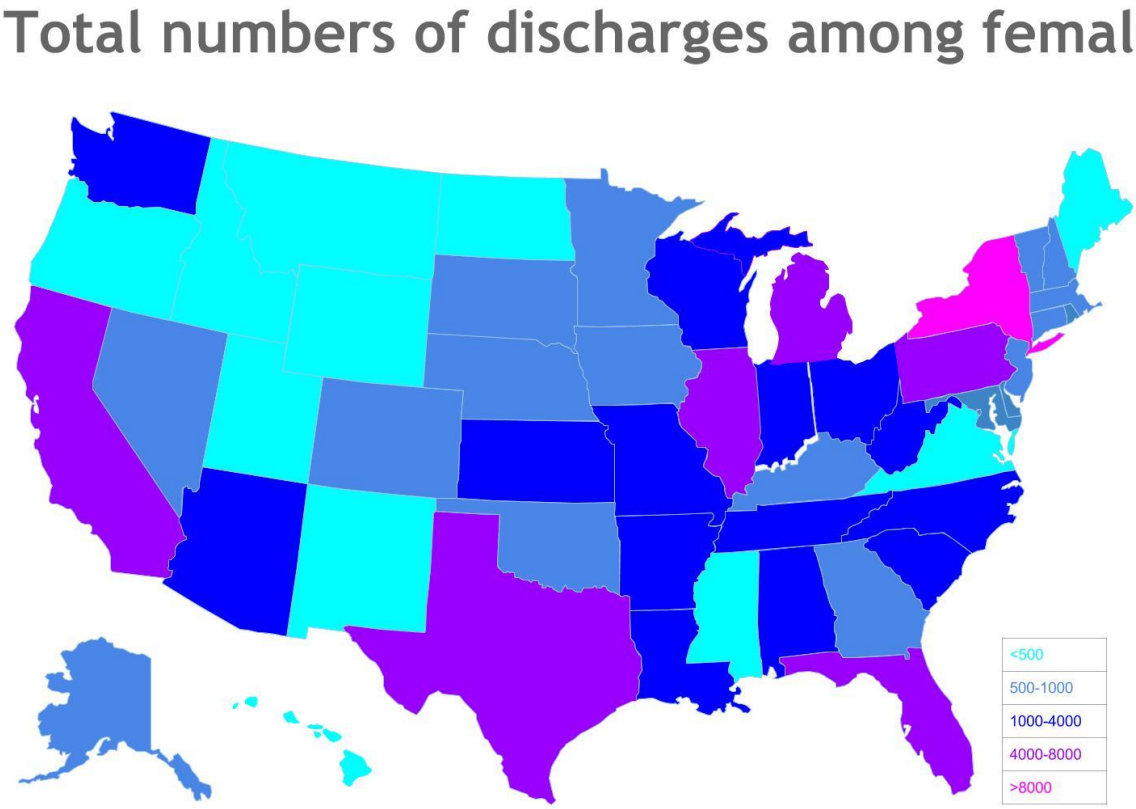


Figure 11: Prevalence of pediatric asthma over the years 2000-2009 (entire nation)

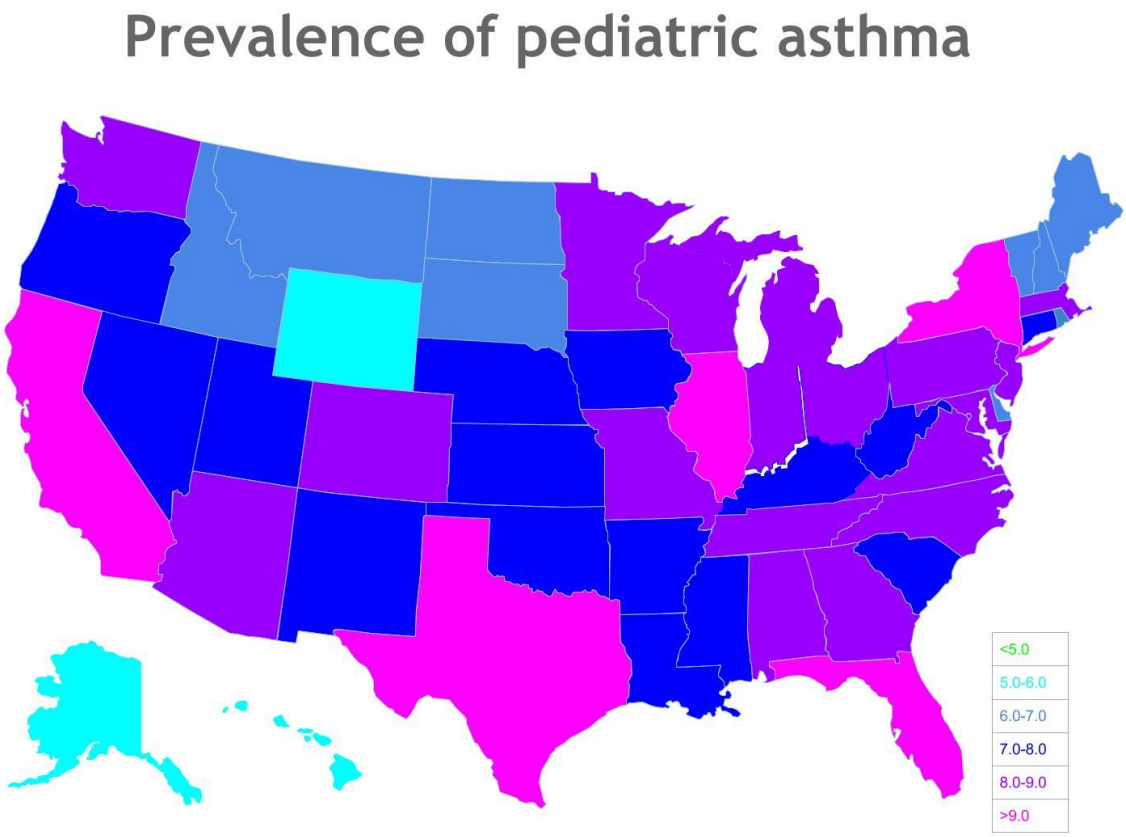


Figure 12: Prevalence of pediatric asthma among males over the years 2000-2009 (entire nation)

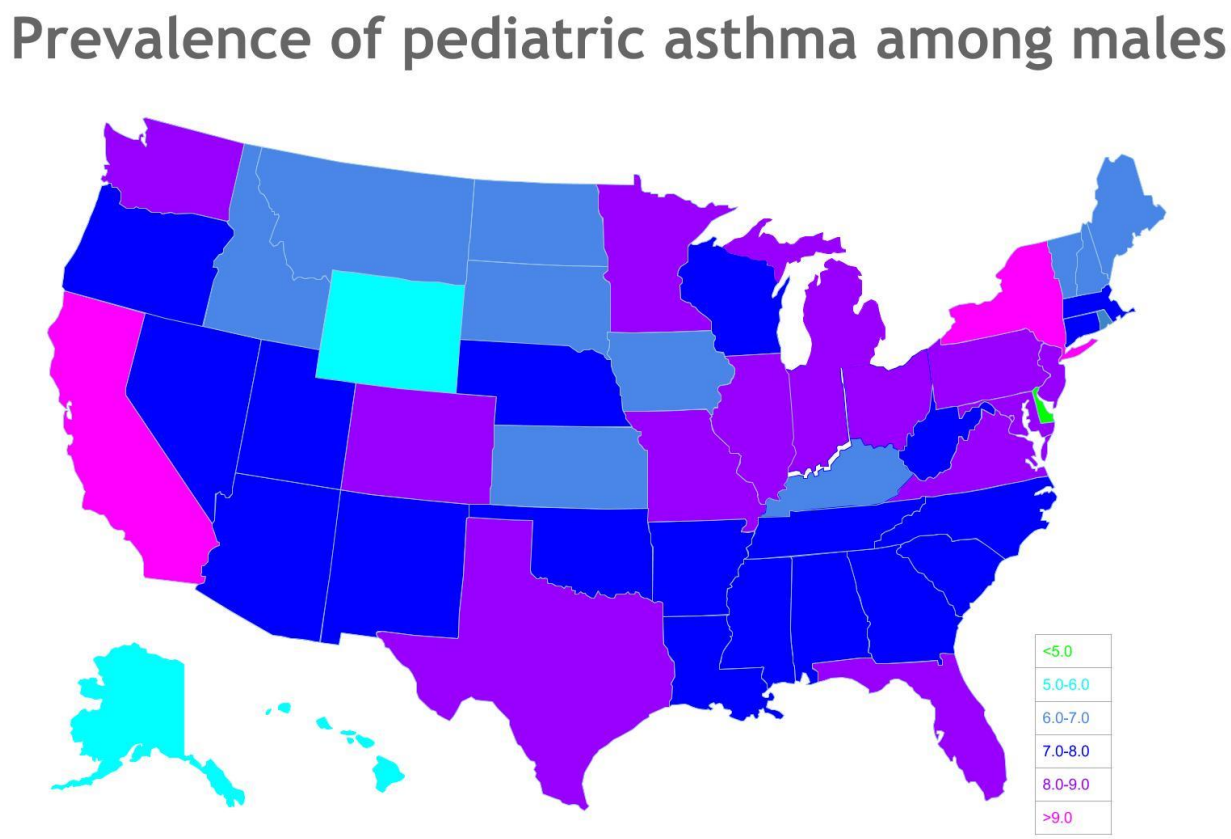
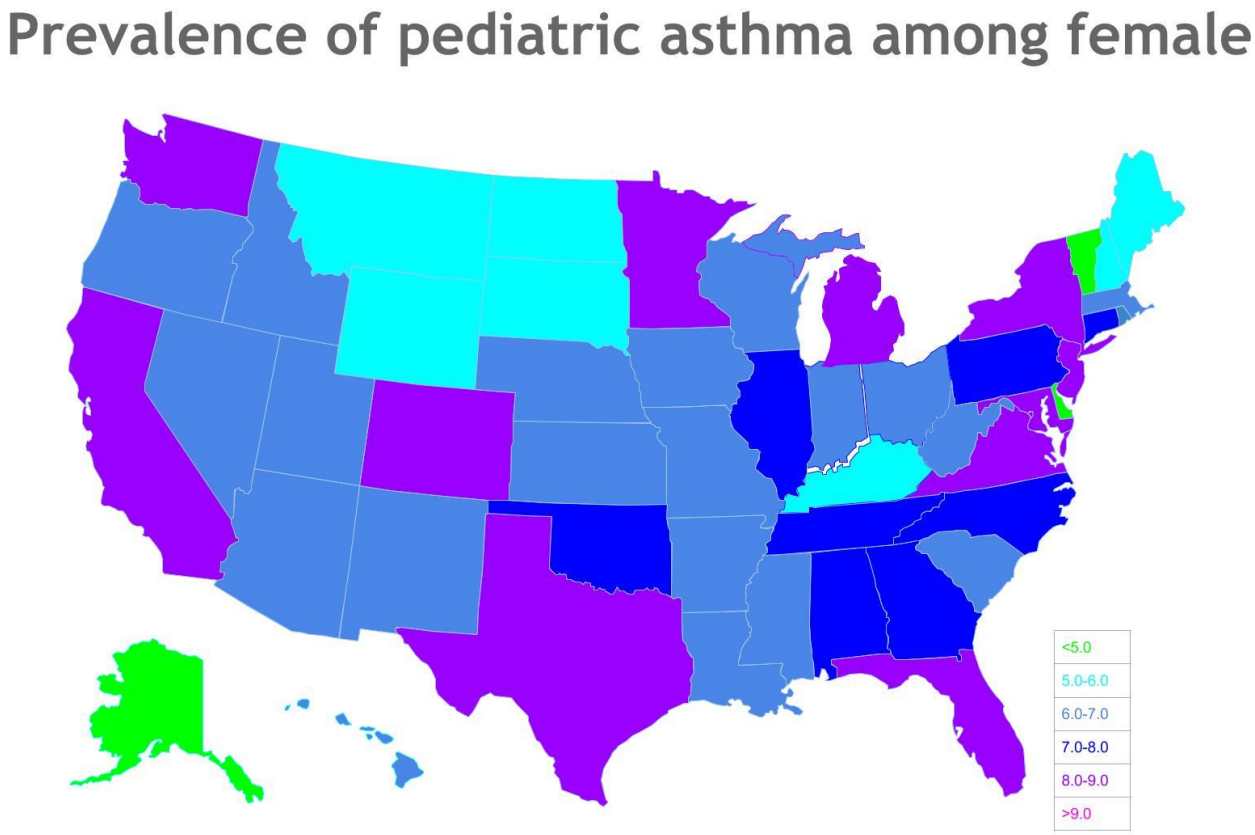


Figure 13: Prevalence of pediatric asthma among females over the years 2000-2009 (entire nation)



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Appendix

Table A: Pediatric population state by state over years 2000-2009

Pediatric (Age<18) population state by state over years				
Year	2000	2003	2006	2009
State	Pediatric Population			
AK	144195	152473	157463	170456
AL	1022833	1057677	1080772	1147136
AR	614882	640542.8	660554.9	699821
AZ	1180045	1311491	1449085	1518963
CA	7790479	8338846	8496225	8940949
CO	989290	1069412	1117044	1207007
CT	783280	818592.4	823630.1	857783.3
DC	131573.6	132395.2	136659.6	144413.5
DE	180228	192110.4	200566.9	215504.2
FL	3675947	3999481	4251124	4512315
GA	1882884	2040908	2200526	2325037
HI	278653.5	295537.9	302092	326472.2
ID	297609.2	321088	344619.3	376219.7
IL	2856437	2973583	3015513	3079352
IN	1398512	1455976	1483677	1556112
IA	673054.5	691854.6	700790	731124
KS	618336.1	640024.1	649557.6	684748.3
KY	929606.9	967689.3	988427.4	1041447
LA	1027864	1056638	1007625	1088009
ME	293232.3	306846.1	310569.9	318806.6
MD	1218192	1294594	1319696	1385652
MA	1460292	1511854	1512740	1571431
MI	2285842	2368796	2372476	2372072
MN	1131480	1188953	1214269	1272942
MS	654271.3	677101	683976.9	712151.3
MO	1286899	1340554	1373038	1437342
MT	207504.9	215640.9	221988.5	237459.6
NE	393590.5	408733.4	415557.8	438321.8
NV	459599.1	526671.2	586449.3	648132.2
NH	284230.8	302606.4	309000.3	315953.3
NJ	1935301	2030023	2050272	2110055
NM	418380.6	440534.3	459330.8	494203.2
NY	4364585	4509677	4536953	4650745
NC	1851342	1975703	2081279	2288514
ND	147706	148951.7	149428.7	161421.8
OH	2611222	2687413	2697331	2768760
OK	793650.4	825210	841114.8	900325
OR	786921.8	836505.1	869678.1	919457.8
PA	2824642	2905882	2923546	3048571
RI	241113.4	252898.5	250888.4	252616.1
SC	922762.8	974580.7	1015494	1110087
SD	173614.1	179612.6	183751	195403.2
TN	1308535	1372811	1419119	1523066
TX	4795919	5197850	5524329	6034935
UT	513628.9	552594.7	599264.8	663332.4
VT	140030.2	145490.1	146618.4	150177.8
VA	1628058	1735788	1796078	1920246
WA	1355648	1440890	1503013	1613890
WV	415919.1	425433.2	427340.5	444719
WI	1233645	1285990	1305779	1364877
WY	113569.9	117791.9	121025.9	135270.7
Total	64727038	68340298	70358644	74098929

Table B: Total pediatric discharges state by state over years 2000-2009

Total pediatric discharges state by state over years 2000-2009								
Year	2000		2003		2006		2009	
State	Discharges	Standard error	Discharges	Standard error	Discharges	Standard error	Discharges	Standard error
AK	2961	1034	3645	1242	372.3422	97	220.0294	38.04308
AL	3437.679	806.4282	2787.183	409.8049	2311.292	573	2325.747	687.0917
AR	1969.966	542.4414	1204.613	454	1298	326	1050	280
AZ	4003.293	908.161	3750.131	810	3370	812	3579	1169
CA	21628	3109	18552	2567	14456	1987	13777	1985
CO	2369	767	2647	767	2402	723	2618	998
CT	1275	444	2033	744	1939	920	1286	687
DC	231.1335	229.6906	1223	1001	328.6561	301	220.0294	38.04308
DE	406.181	261.175	1447	571	462.8614	250	369.3197	63.85538
FL	14622	2221	16074	2952	10995	1799	10265	1702
GA	3747	636	3416	592	2375	532	1926	387
HI	530	304	581	365	427	270	302	203
ID	828.4914	337.1329	1656	609	765.3715	297	706.8223	407.1796
IL	10034.57	1992.961	7678	1192	6744	1201	6317	1146
IN	4789.284	1049.531	3720	762	2356	494	3119	831
IA	4542	1057	937	195	654	129	723	184
KS	4337	1108	1577	435	1580	559	907	258
KY	3577	597	5158	1121	3336	875	3839	1408
LA	3455.782	809.6841	2783.244	687	2157.685	505	3433	762
ME	418	116	1478	493	693.8678	221	128	35
MD	4261	907	4547	1000	3823	855	3854	869
MA	3234	1290	5129	1426	3881	1186	3626	1194
MI	7981.695	1623.727	3679	754	3199	666	2984	674
MN	3828.567	876.7342	2353	822	1990	718	1545	594
MS	2111.68	567.9304	4248	1627	1478.022	386	1412.279	529.153
MO	5336	1234	3860.394	410.2342	3953	1459	3891	1518
MT	504.3168	278.826	1395	694	507.8469	294	270	78
NE	1173.81	399.2428	395	99	181	73	254	72
NV	1411.294	441.9572	1004	431	780	303	1108	428
NH	780.359	328.4757	442	124	454	133	221	78
NJ	5394	985	8477	1429	7290	1249	5282	965
NM	1262.999	415.2845	999	313	1006.266	303	861	319
NY	17249	2231	24311	3164	20825	2725	15649	2295
NC	5915	810	6144	861	4082	679	4679	994
ND	289.1743	240.1299	875	650	355.4714	277	255.7469	44.21863
OH	9152.337	1834.281	7270	1894	5861	1546	5536	1628
OK	2613.133	658.1232	1905.224	409.4521	2415	610	1981	646
OR	1139	332	929	260	748	256	818	333
PA	10845	3473	9799.116	3271	6181.117	2139	9201	3977
RI	625.2325	300.5742	854	694	686	566	678	631
SC	3564	712	3911	825	2444	557	2101	496
SD	977	256.8952	201	80	214	120	133	56
TN	4218	1539	4181	1306	3295	1284	2534	1141
TX	19202	3173	17267	2680	16204	2912	14305	2696
UT	986	466	1041	497	941	539	1092	713
VT	870	235.1629	230	85	202	89	107	47
VA	3944	1076	3799	1092	2497	723	2414	736
WA	3914	1672	2376	748	2257	766	2137	758
WV	1548	376	1726	412	1194	396	883	234
WI	8064	1976	2843	1392	2387	1189	2041	1124
WY	785	218.0403	979	409.0816	295.8255	134	167	44
Total	220520.3	49257.59	205871.9	46585.57	160651.6	38003	149131	39180.58

Table C-1: Discharges among males state by state over years 2000-2009

	Discharges among males state by state over years 2000-2009							
Year	2000		2003		2006		2009	
State	Discharges	SE	Discharges	SE	Discharges	SE	Discharges	SE
AK	1912	695	299.4958	275.7533	179.9504	40.9112	204.665	72.4706
AL	2253.246	310.9479	1838.343	479.3428	1472.584	412.4238	1376.682	418.6284
AR	1437.344	198.3535	1129.216	385.5252	797	210	589	147
AZ	2567.671	354.3386	2309	787	2010	655	2306	756
CA	13644	1882.872	9589	1493	7770	1205	7702	1225
CO	1379	190.302	1652	483	1369	426	1532	592
CT	796	109.848	1227	451	1223	605	826	444
DC	470.7271	64.96035	265.3649	145	150.8264	229.8891	173.4147	58
DE	568.036	310.9479	366.8807	284.6683	240.2966	70.215	258.7235	103
FL	9167	1404	9837	1613	6839	1126	6456	1085
GA	2242	393	2081	371	1495	341	1128	226
HI	300	171	337	228	276	175	180	122
ID	802.7984	110.7862	586.1426	313.6767	441.97	270.0961	451.5821	255.9033
IL	5920.455	817.0228	4701	756	4164	752	3982	732
IN	3004.603	414.6352	2239	472	1468	317	1943	560
IA	2838	689	586	123	373	80	436	120
KS	2512	639	992	274	963	357	562	165
KY	2122	360	3078	691	1945	486	2253	825
LA	2263.309	312.3366	1836.578	479.1093	1370.179	398.2817	2140	497
ME	261	73	561.9313	310.4735	394.3008	263.5129	86	25
MD	2745	594	2846	636	2348	531	2433	549
MA	1851	757	3036	839	2245	680	2191	731
MI	4779.264	659.5385	2311	473	1969	411	1853	423
MN	2470.54	340.9346	1517	541	1245	446	1015	392
MS	1516.123	209.2249	1191.365	393.7476	917.0707	335.7075	854.7	326.8117
MO	3258	803	2530	1001	2420	893	2375	918
MT	622.5897	85.91738	406.8826	289.9606	270.2869	246.3866	180	56
NE	994.761	137.277	249	64	169	42	158	46
NV	1126.778	155.4954	569	234	497	197	676	272
NH	776.0416	107.0937	258	75	274	80	121	48
NJ	3185	572	5214	891	4467	772	3219	603
NM	1044.341	144.1191	789.2013	340.5413	522	281.1482	546	210
NY	10528	1339	14769	1926	12492	1607	9359	1386
NC	3543	490	3716	525	2532	422	2985	635
ND	502.992	69.4129	293.5109	78	168.7032	50.3579	193.8247	210.5638
OH	5430.024	749.3434	4373	1135	3649	953	3465	1026
OK	1794.881	247.6936	1443.15	427.0587	1578	396	1234	406
OR	700	210	567	172	465	159	497	210
PA	6543	2081	4980.292	895.0227	4052.467	768.7057	5473	2357
RI	689.8067	95.19333	505	421	428	353	429	400
SC	2236	450	2350	489	1447	337	1316	318
SD	554.8082	76.56354	133	46	136	77	83	37
TN	2626	969	2559	805	1985	799	1494	680
TX	11750	1976	10669	1663	10151	1860	9065	1682
UT	599	279	601	277	573	324	671	436
VT	487.6404	67.29438	127	49	133	60	68	32
VA	2434	667	2457	727	1534	450	1453	451
WA	2392	1068	1419	457	1394	476	1380	490
WV	937	234	1098	266	753	197	540	150
WI	4919	1260	1762	843	1436	708	1292	715
WY	434.7197	59.99132	240.5392	101	128.9393	40.8665	104	27
Total	139932.5	26455.44	120491.9	27495.88	97321.57	23373.5	91309.59	24652.38

Table C-2: Discharges among females state by state over years 2000-2009

Discharges among females state by state over years 2000-2009								
Year	2000		2003		2006		2009	
State	Discharges	SE	Discharges	SE	Discharges	SE	Discharges	SE
AK	1047	341	229.1215	176.0324	176.6432	53	179.9588	33.07643
AL	1442.65	302.8566	1224.846	307.0698	1007.622	240.4477	863.6355	255.6632
AR	953.1084	196.4698	765.9991	246.6855	500	118	461	135
AZ	1631.304	343.855	1336	455	1360	419	1272	415
CA	7983	1182	5741	916	4354	676	4077	651
CO	989	337	994	285	1033	299	1085	407
CT	478	157	806	294	715	316	460	243
DC	373.1383	70.43096	207.0368	77	177.7897	147.9195	161.7295	126.6529
DE	431.5236	83.11923	272.7234	123	231.5333	153.891	211.4929	135.7994
FL	5454	825	6237	986	4156	678	3805	623
GA	1504	247	1334	227	879	194	798	164
HI	228	133	244	138	150	94	122	80
ID	572.381	113.7303	414.5988	200.4412	347.6132	166.7888	323.9938	156.4771
IL	3642.975	781.0302	2976	440	2580	453	2334	416
IN	1893.464	400.8273	1480	293	888	179	1175	276
IA	1688	385	350	80	281	53	286	66
KS	1824	481	585	162	616	206	344	95
KY	1454	242	2080	436	1391	392	1586	584
LA	1448.687	304.1687	1223.704	306.9195	1009.609	240.3438	1291	269
ME	157	45	398.9327	198.3795	334.7955	165.3646	41	12
MD	1516	315	1701	367	1474	328	1420	325
MA	1382	534	2093	590	1636	507	1434	466
MI	2958.261	632.2284	1368	284	1229	261	1131	255
MN	1573.026	331.19	836	282	745	273	529	203
MS	1000.376	206.7419	806.2131	251.9776	668.0249	202.3901	559.1459	199.698
MO	2077	453	1718	628	1533	568	1515	601
MT	464.2558	90.23258	298.607	185.1767	252.7108	156.2441	90	26
NE	687.5586	138.7606	145	37	112	33	95	27
NV	766.7689	155.9746	434	198	283	107	432	157
NH	556.3269	110.2414	184	50	180	57	100	34
NJ	2208	415	3263	543	2822	482	2062	366
NM	717.3067	145.2255	545.9897	217.7322	455.1149	178.7334	315	112
NY	6721	902	9542	1251	8333	1127	6289	916
NC	2371	327	2428	344	1550	261	1693	360
ND	392.4972	74.63803	225.2489	175.5228	192.6905	149.5752	173.6353	128.8412
OH	3348.717	717.0821	2897	762	2211	595	2071	605
OK	1167.631	243.0896	969.133	273.4179	837	223	746	241
OR	438	125	361	90	282	97	320	124
PA	4301	1395	3257.872	574.616	2673.928	425.2682	3728	1621
RI	504.586	98.99712	348	273	257	213	248	230
SC	1327	266	1561	344	997	222	784	183
SD	423.5869	81.39444	68	24	78	43	49	20
TN	1592	571	1621	504	1309	486	1040	462
TX	7442	1203	6598	1022	6053	1056	5239	1016
UT	386	188	440	221	367	214	421	277
VT	383.2863	72.63631	103	38	68	30	38	16
VA	1508	415	1341	370	963	280	960	286
WA	1521	605	956	292	863	292	757	270
WV	611	146	627	148	441	111	343	87
WI	3144	726	1081	549	951	481	748	409
WY	351.5338	65.73589	190.9731	171.0121	164.6467	146.4592	63	20
Total	89035.95	18721.66	76908	17407.98	62169.72	14850.43	56270.59	15187.21

Table D: Prevalence of pediatric asthma state by state over years 2000-2009

	Prevalence of pediatric asthma state by state over years 2000-2009							
Year	2000		2003		2006		2009	
State	Prevalence	SE	Prevalence	SE	Prevalence	SE	Prevalence	SE
AK	6.1148	0.114	6.0453	0.1544	5.5959	0.1063	5.179	0.0947
AL	8.0386	0.0806	7.8574	0.1021	7.5863	0.0778	7.467	0.0894
AR	7.5389	0.0685	7.3882	0.0887	7.0775	0.0661	6.8739	0.0719
AZ	8.179	0.0863	8.0586	0.1131	7.8893	0.0896	7.8039	0.1026
CA	10.0322	0.1952	9.7892	0.2553	9.7169	0.1888	9.9312	0.2065
CO	8.0058	0.0794	7.8677	0.1026	7.6204	0.079	7.528	0.0916
CT	7.7766	0.0724	7.6177	0.0927	7.3055	0.0698	7.1182	0.0779
DC	6.0248	0.1191	5.9132	0.1651	5.4495	0.1138	4.98	0.1027
DE	6.3338	0.1021	6.2615	0.1376	5.8459	0.0943	5.4604	0.0844
FL	9.2947	0.1479	9.1018	0.1937	9.0014	0.1471	9.1106	0.1642
GA	8.6378	0.1091	8.4724	0.1418	8.321	0.1102	8.3148	0.1254
HI	6.7617	0.0822	6.6645	0.1104	6.2691	0.0773	5.9589	0.071
ID	6.8263	0.0797	6.7421	0.1061	6.4052	0.073	6.1291	0.0684
IL	9.047	0.1327	8.8245	0.1701	8.6465	0.1274	8.652	0.1415
IN	8.3458	0.0939	8.1564	0.1193	7.9137	0.0907	7.8329	0.1039
IA	7.6276	0.0695	7.4603	0.0894	7.1386	0.0668	6.9264	0.0731
KS	7.5444	0.0685	7.3874	0.0887	7.0602	0.0659	6.8478	0.0714
KY	7.9447	0.0773	7.7742	0.0983	7.494	0.0748	7.351	0.0852
LA	8.0434	0.0808	7.8565	0.102	7.5139	0.0754	7.4035	0.0871
ME	6.8118	0.0802	6.6996	0.1084	6.2977	0.0763	5.9304	0.0716
MD	8.2102	0.0877	8.0465	0.1124	7.7926	0.0856	7.6937	0.0981
MA	8.3882	0.096	8.1916	0.1216	7.9337	0.0916	7.8447	0.1044
MI	8.8282	0.1198	8.6118	0.1527	8.3987	0.1142	8.3388	0.1265
MN	8.1377	0.0845	7.9669	0.1078	7.7066	0.0822	7.5919	0.0941
MS	7.5998	0.0691	7.4401	0.0892	7.1135	0.0665	6.8949	0.0724
MO	8.2641	0.0901	8.0791	0.1144	7.8336	0.0873	7.7376	0.0999
MT	6.4722	0.095	6.3696	0.1297	5.9507	0.0896	5.5768	0.0806
NE	7.1008	0.0716	6.9679	0.0957	6.5986	0.0684	6.3124	0.067
NV	7.253	0.069	7.2051	0.0896	6.9546	0.0654	6.7818	0.0702
NH	6.7812	0.0814	6.6866	0.1092	6.2925	0.0765	5.9196	0.0718
NJ	8.6647	0.1105	8.4674	0.1415	8.2479	0.1065	8.1984	0.12
NM	7.1608	0.0704	7.038	0.0934	6.7021	0.0668	6.4564	0.0669
NY	9.4633	0.1584	9.2141	0.2036	9.0686	0.1509	9.1468	0.1661
NC	8.6212	0.1082	8.442	0.1395	8.2634	0.1073	8.2958	0.1245
ND	6.1384	0.1126	6.0234	0.1561	5.5418	0.109	5.1136	0.0972
OH	8.9589	0.1274	8.7298	0.1623	8.5313	0.1212	8.5244	0.1353
OK	7.7895	0.0727	7.6252	0.0929	7.3272	0.0702	7.1762	0.0796
OR	7.7811	0.0725	7.6379	0.0933	7.3617	0.0711	7.2015	0.0804
PA	9.036	0.132	8.803	0.1683	8.6145	0.1256	8.64	0.1409
RI	6.6196	0.0881	6.5187	0.1195	6.0772	0.0844	5.6511	0.0784
SC	7.9375	0.077	7.7808	0.0986	7.5219	0.0756	7.4276	0.0879
SD	6.2971	0.104	6.1986	0.1424	5.7554	0.0985	5.3429	0.0885
TN	8.2805	0.0908	8.1014	0.1158	7.8677	0.0887	7.8072	0.1028
TX	9.5559	0.1643	9.347	0.2153	9.2721	0.1626	9.4595	0.182
UT	7.3622	0.0681	7.25	0.089	6.9769	0.0654	6.8096	0.0707
VT	6.086	0.1156	6.0015	0.1579	5.5221	0.11	5.027	0.1008
VA	8.495	0.1014	8.3209	0.1306	8.1111	0.0998	8.0853	0.1149
WA	8.3152	0.0925	8.1467	0.1187	7.927	0.0913	7.8767	0.1057
WV	7.155	0.0705	7.0053	0.0944	6.6275	0.0679	6.3298	0.0669
WI	8.2226	0.0882	8.0403	0.112	7.7817	0.0851	7.6756	0.0974
WY	5.8804	0.1275	5.8039	0.1742	5.3239	0.1203	4.9015	0.1061

Table E-1: Prevalence among males state by state over years 2000-2009

	Prevalence among males state by state over years 2000-2009							
Year	2000		2003		2006		2009	
State	Prevalence	SE	Prevalence	SE	Prevalence	SE	Prevalence	SE
AK	6.0561	0.095	5.2916	0.0962	5.0381	0.083	4.7045	0.1067
AL	7.6152	0.072	7.3428	0.0714	7.0995	0.0645	6.981	0.0907
AR	7.2102	0.0598	6.8117	0.0606	6.5726	0.0543	6.3909	0.0743
AZ	7.7289	0.0773	7.5706	0.079	7.4134	0.0742	7.3162	0.1042
CA	9.2309	0.1729	9.5295	0.1715	9.3062	0.153	9.4328	0.214
CO	7.5886	0.0709	7.3545	0.0717	7.1349	0.0655	7.0417	0.0929
CT	7.4028	0.0641	7.0714	0.0644	6.8088	0.0577	6.6339	0.0796
DC	5.9832	0.0994	5.1421	0.1029	4.8865	0.0888	4.5065	0.1157
DE	6.2336	0.085	5.5364	0.086	5.2971	0.0738	4.9845	0.0949
FL	8.6332	0.1318	8.7514	0.1317	8.5651	0.12	8.6163	0.169
GA	8.1008	0.0977	8.0389	0.0981	7.8604	0.0906	7.8245	0.1279
HI	6.5804	0.0686	5.9925	0.07	5.7354	0.061	5.4804	0.0786
ID	6.6327	0.0666	6.0803	0.0676	5.8763	0.058	5.6498	0.0749
IL	8.4324	0.1185	8.4375	0.1164	8.1976	0.1043	8.16	0.1449
IN	7.8641	0.0842	7.6813	0.0832	7.4386	0.075	7.3451	0.1054
IA	7.2821	0.061	6.8933	0.0614	6.6359	0.055	6.4431	0.0752
KS	7.2147	0.0598	6.8108	0.0606	6.5547	0.0542	6.3649	0.0739
KY	7.5391	0.0689	7.2486	0.0687	7.0039	0.062	6.8656	0.0866
LA	7.6191	0.0722	7.3418	0.0713	7.0245	0.0625	6.9178	0.0884
ME	6.6209	0.0671	6.0323	0.0689	5.765	0.0603	5.4521	0.0794
MD	7.7543	0.0785	7.5569	0.0785	7.3133	0.0709	7.2065	0.0995
MA	7.8985	0.0861	7.7211	0.0847	7.4594	0.0757	7.3568	0.1059
MI	8.2551	0.1072	8.1967	0.1052	7.941	0.0938	7.8484	0.1291
MN	7.6955	0.0757	7.4667	0.0754	7.2242	0.0681	7.1052	0.0954
MS	7.2596	0.0606	6.8705	0.0612	6.6099	0.0547	6.4117	0.0747
MO	7.7979	0.0807	7.5938	0.0799	7.3557	0.0722	7.2503	0.1013
MT	6.3458	0.0791	5.6587	0.0812	5.4057	0.0702	5.1003	0.0905
NE	6.8552	0.0605	6.3359	0.0623	6.0767	0.0549	5.8322	0.0723
NV	6.9786	0.0589	6.6044	0.0599	6.4453	0.0534	6.2992	0.0729
NH	6.5961	0.068	6.0175	0.0693	5.7596	0.0605	5.4413	0.0797
NJ	8.1226	0.099	8.0333	0.0978	7.7848	0.0877	7.7087	0.1222
NM	6.9038	0.0597	6.4153	0.0612	6.1838	0.0539	5.9755	0.0714
NY	8.7698	0.141	8.8785	0.1381	8.6348	0.123	8.6523	0.171
NC	8.0873	0.0969	8.0045	0.0965	7.8008	0.0883	7.8056	0.1269
ND	6.0752	0.0939	5.2669	0.0973	4.9821	0.0851	4.6394	0.1096
OH	8.361	0.1139	8.3303	0.1114	8.0783	0.0994	8.0331	0.1383
OK	7.4133	0.0644	7.08	0.0646	6.8312	0.0581	6.6917	0.0812
OR	7.4065	0.0642	7.0944	0.0649	6.867	0.0589	6.7168	0.0819
PA	8.4235	0.1179	8.4131	0.1153	8.1645	0.1029	8.148	0.1442
RI	6.4652	0.0734	5.8275	0.0752	5.5366	0.0663	5.1742	0.0879
SC	7.5332	0.0687	7.2561	0.0689	7.0329	0.0627	6.9418	0.0892
SD	6.2039	0.0866	5.4651	0.0889	5.2034	0.077	4.8676	0.0997
TN	7.8112	0.0814	7.619	0.0808	7.391	0.0734	7.3194	0.1043
TX	8.8448	0.1461	9.029	0.1457	8.8455	0.1323	8.9634	0.1879
UT	7.067	0.0586	6.6553	0.0599	6.4684	0.0536	6.3269	0.0733
VT	6.0328	0.0964	5.242	0.0984	4.9618	0.0859	4.5532	0.1135
VA	7.9851	0.0909	7.8674	0.0907	7.6431	0.0823	7.5961	0.1169
WA	7.8393	0.0829	7.6702	0.0827	7.4525	0.0755	7.3886	0.1073
WV	6.8991	0.0598	6.3783	0.0617	6.1066	0.0545	5.8495	0.0722
WI	7.7643	0.079	7.5498	0.0783	7.3019	0.0705	7.1885	0.0988
WY	5.8661	0.1066	5.0183	0.1086	4.7565	0.0939	4.4284	0.1194

Table E-2: Prevalence among females state by state over years 2000-2009

	Prevalence among females state by state over years 2000-2009							
Year	2000		2003		2006		2009	
State	Prevalence	SE	Prevalence	SE	Prevalence	SE	Prevalence	SE
AK	5.7464	0.1044	4.9019	0.1125	4.7538	0.1098	4.2181	0.1263
AL	7.1925	0.0765	6.894	0.0797	6.6709	0.0762	6.4957	0.1053
AR	6.8169	0.0643	6.3782	0.0683	6.1809	0.0659	5.9053	0.0865
AZ	7.2981	0.0819	7.1152	0.0883	6.9628	0.0876	6.8311	0.1211
CA	8.6912	0.1838	9.0177	0.1942	8.7231	0.1863	8.9487	0.2502
CO	7.1679	0.0753	6.9053	0.0801	6.7038	0.0773	6.5565	0.1079
CT	6.9956	0.0685	6.6304	0.0721	6.4005	0.0688	6.1484	0.0925
DC	5.6788	0.1091	4.7567	0.1203	4.6128	0.1174	4.0201	0.137
DE	5.911	0.0935	5.1396	0.1005	4.9947	0.0975	4.4983	0.1123
FL	8.1368	0.1397	8.262	0.1485	8.0339	0.1446	8.1317	0.1972
GA	7.643	0.1034	7.5701	0.1099	7.3786	0.1078	7.3396	0.1489
HI	6.2327	0.0754	5.5826	0.0814	5.4023	0.0797	4.9945	0.0927
ID	6.2813	0.0733	5.6679	0.0784	5.5334	0.0751	5.1639	0.0882
IL	7.9506	0.1255	7.9572	0.1309	7.6921	0.1249	7.6753	0.1688
IN	7.4234	0.0892	7.2227	0.093	6.9863	0.0886	6.8599	0.1225
IA	6.8836	0.0655	6.4574	0.0691	6.2398	0.0664	5.9576	0.0875
KS	6.821	0.0644	6.3773	0.0683	6.1642	0.0658	5.8793	0.086
KY	7.122	0.0733	6.8025	0.0767	6.582	0.0734	6.3802	0.1006
LA	7.1961	0.0767	6.893	0.0797	6.6012	0.0739	6.4325	0.1026
ME	6.2703	0.0737	5.6212	0.08	5.4298	0.0786	4.9661	0.0936
MD	7.3215	0.0832	7.1019	0.0877	6.8697	0.0836	6.7214	0.1156
MA	7.4554	0.0911	7.2614	0.0947	7.0056	0.0895	6.8717	0.1231
MI	7.7861	0.1135	7.7233	0.118	7.4535	0.1117	7.3636	0.1503
MN	7.267	0.0803	7.0143	0.0842	6.7868	0.0803	6.62	0.1108
MS	6.8627	0.0651	6.4353	0.0689	6.2156	0.0662	5.9262	0.0869
MO	7.362	0.0855	7.1378	0.0892	6.9091	0.0853	6.7651	0.1177
MT	6.0151	0.0871	5.2584	0.0948	5.0956	0.0927	4.6142	0.1071
NE	6.4876	0.0662	5.9161	0.0716	5.7197	0.0699	5.3464	0.0849
NV	6.602	0.0641	6.1768	0.0681	6.0625	0.0656	5.8137	0.085
NH	6.2473	0.0748	5.6069	0.0805	5.4248	0.0788	4.9553	0.094
NJ	7.6632	0.1048	7.5646	0.1096	7.3082	0.1041	7.2237	0.1422
NM	6.5327	0.0652	5.9932	0.0702	5.8193	0.0679	5.4897	0.0836
NY	8.2635	0.1496	8.3855	0.1558	8.0987	0.1484	8.1678	0.1995
NC	7.6305	0.1026	7.5367	0.1082	7.3231	0.1049	7.3207	0.1478
ND	5.7641	0.1032	4.8779	0.1138	4.7017	0.1126	4.1531	0.1298
OH	7.8843	0.1206	7.8531	0.1251	7.5812	0.1187	7.5483	0.1612
OK	7.0053	0.0688	6.6387	0.0723	6.4214	0.0693	6.2063	0.0943
OR	6.999	0.0686	6.6527	0.0727	6.4547	0.07	6.2314	0.0951
PA	7.9423	0.1249	7.9335	0.1296	7.6613	0.1231	7.6633	0.1681
RI	6.1259	0.0808	5.4223	0.0876	5.2174	0.0872	4.6881	0.1039
SC	7.1165	0.073	6.8098	0.077	6.6089	0.0742	6.4565	0.1036
SD	5.8834	0.0952	5.0704	0.1039	4.9075	0.1018	4.3813	0.118
TN	7.3744	0.0863	7.1622	0.0903	6.942	0.0867	6.8343	0.1212
TX	8.3331	0.155	8.5316	0.1645	8.2947	0.1601	8.4791	0.2195
UT	6.6841	0.0636	6.2263	0.0679	6.084	0.0656	5.8413	0.0854
VT	5.7247	0.1059	4.8537	0.1151	4.6828	0.1136	4.0668	0.1345
VA	7.5356	0.0963	7.4035	0.1015	7.1764	0.0975	7.1111	0.1359
WA	7.4005	0.0878	7.212	0.0925	6.9992	0.0892	6.9035	0.1248
WV	6.5283	0.0653	5.9573	0.0708	5.7475	0.0693	5.3637	0.0846
WI	7.3309	0.0837	7.095	0.0874	6.8592	0.0832	6.7033	0.1147
WY	5.5702	0.1169	4.6365	0.1269	4.4919	0.1241	3.9419	0.1414